

### **ABSTRACT**

A hypobarically-controlled artificial limb for amputees includes a single socket with a volume and shape to receive a substantial portion of the residual limb. A liner with a volume less than the residual limb is donned over the residual limb, with the liner tensioned into a total contact relationship with the residual limb. A sealed cavity is formed between the socket and the liner. A vacuum source is connected to the socket cavity thereby drawing the residual limb and liner into firm and total contact with the socket. To compensate for some air leakage past the seal, there is a mechanism to maintain the vacuum in the cavity. An osmotic membrane encases the residual limb and creates a space between the residual limb and the liner. The osmotic membrane allows passage of water only in one direction: from the residual limb toward the liner. Vacuum may be applied to the space between the osmotic membrane and the liner to assist in wicking perspiration away from the residual limb.

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